

WE CLAIM:

1. A system for preventing rollover of a road vehicle, the system comprising:

a vehicle suspension device located proximate to each of the vehicle's road wheels for maintaining a predefined vehicle body height with respect to a road surface; and

a control unit in communication with the vehicle suspension device and having executable code for controlling the actuation of the vehicle suspension device to lower the body of the vehicle to counteract a roll moment after the control unit has received a vehicle rollover notification signal.

2. The system of claim 1 wherein the vehicle suspension device includes an air bladder for raising or lowering the vehicle body.

3. The system of claim 2 wherein the vehicle suspension device includes a release valve in communication with the air bladder.

4. The system of claim 3 wherein the release valve is a diaphragm actuated release valve that is in communication with the air bladder.

5. The system of claim 2 further comprising a diaphragm actuator valve in communication with the diaphragm actuated release valve for actuating the diaphragm actuated release valve.

6. The system of claim 2 further comprising an air reservoir in communication with the air bladder for injecting air into the air bladder to lower or raise the vehicle body.

7. The system of claim 2 further comprising a pyrotechnic device in communication with the air bladder for injecting a gas into the bladder to lower or raise the vehicle body.

8. The system of claim 1 wherein the control unit further comprises executable program code for determining whether the vehicle is in a rollover condition.

9. A method for preventing a vehicle from rolling over, the method comprising:

sensing a vehicle parameter;

determining whether the vehicle is in a vehicle rollover condition based on the sensed vehicle parameter;

determining the type of vehicle rollover condition based on the sensed vehicle parameter; and

actuating a vehicle suspension device to lower or raise the vehicle body based on the determined rollover condition to prevent the vehicle from rolling over.

10. The method of claim 9 wherein sensing a vehicle parameter further comprises sensing a roll angular rate.

11. The method of claim 9 wherein sensing a vehicle parameter further comprises sensing a vehicle body height with respect to a road surface.

12. The method of claim 9 wherein sensing a vehicle parameter further comprises sensing a lateral acceleration of the vehicle.

13. The method of claim 9 wherein determining the type of vehicle rollover condition further comprises determining whether the vehicle is in a curve in a road.

14. The method of claim 13 wherein actuating a vehicle suspension device further comprises lowering the vehicle body by actuating the vehicle suspension device proximate to the front road wheel of the vehicle on the side of the vehicle where the vehicle body has been raised by vehicle roll.

15. The method of claim 14 wherein actuating a vehicle suspension device further comprises releasing a fluid from the vehicle suspension device to lower the vehicle body.

16. The method of claim 14 wherein actuating a vehicle suspension device further comprises raising the vehicle body by actuating the vehicle suspension device proximate to the front road wheel of the vehicle on the side of the vehicle where the vehicle body has been lowered by vehicle roll.

17. The method of claim 16 wherein actuating a vehicle suspension device further comprises injecting a fluid into the vehicle suspension device to raise the vehicle body.

18. The method of claim 17 wherein injecting a fluid into the vehicle suspension device to raise the vehicle body further comprises activating a pyrotechnic device to inject a gas into the bladder of the vehicle suspension device.

19. The method of claim 9 wherein determining the type of vehicle rollover condition further comprises determining whether the vehicle is on an incline.

20. The method of claim 19 wherein actuating a vehicle suspension device further comprises lowering the vehicle suspension device proximate to each road wheel of the vehicle adjacent an uphill side of the incline.

21. The method of claim 20 wherein actuating a vehicle suspension device further comprises releasing a fluid from the vehicle suspension device to lower the vehicle suspension device proximate to each road wheel of the vehicle adjacent an uphill side of the incline.

22. The method of claim 19 wherein actuating a vehicle suspension device further comprises raising the vehicle suspension device proximate to each road wheel of the vehicle adjacent the downhill side of the incline.

23. The method of claim 22 wherein actuating a vehicle suspension device further comprises injecting a fluid into the vehicle suspension device to raise the vehicle suspension device proximate to each road wheel of the vehicle adjacent the downhill side of the incline.